

Procedures and Field Methods

Geochemical

Samples in streams were taken of fine silt in the active channel. Soil samples along lines were taken from a depth of 4 - 6 inches, or just below the organic layer. All samples were taken to a field laboratory at Guichon Creek and there dried, screened to minus 80 mesh and tested for copper by the procedure described by E.H.C. Holman. A few of the samples were tested by a method using a stronger extraction (HNO_3) and a colorimetric determination of copper (biquinoline).

Geophysical

The method used was the Induced Polarization technique, in which a direct and a low frequency alternating current are applied to the ground through the same electrodes consecutively. The resistivity of the ground to the two currents is measured. A large difference between the direct current and alternating current resistivity would constitute an anomaly indicating metallic conducting material.

Results

The position of the one line run with Induced Polarization Survey is shown superimposed on the geochemical plan. The results were essentially negative - that is, there was no difference between the direct and alternating current resistivities greater than the normal noise level. *Readings are shown on the accompanying section on a scale of 1 in. to 400 feet*

C. S. Key

CSN/w

Vancouver, B.C.

December 31, 1958

R E P O R T

SHEBA PROSPECT

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1" = 1,000'

#2 - I.D.P. Survey - Sheba
area line No. 1
1" = 400'

NORTHWESTERN EXPLORATIONS, LIMITED

Sheba Prospect

Examined July-Aug. 1958
C.S. Ney, D. Hansen.

SUMMARY

The Sheba Property lies on the north slope of Gnawed Mountain, south of Witches Brook, in Highland Valley, B.C. The ground is apparently favourably situated two to three miles south of important ore occurrences on Bethlehem Copper Corporation ground. There are no known showings of any importance on the property. Interest centered around high stream sediment copper values obtained in 1957 reconnaissance work.

Intermittently during July and August 1958 follow-up geochemical work and geological mapping were done on the property. Stream sediment values were attributed to a very tenuous dispersal of chalcopyrite and bornite in otherwise normal granodiorite. Geological traverses showed that the southerly two-thirds of the property contained several percent outcrop suitably distributed to rule out the possibility of there being any significant ore deposit as a source of the sediment anomalies. Copper mineralisation on a small scale was noted in association with younger porphyry intrusives, a small pebble dyke, and hematite veining. These occurrences are significant when comparison is made with ore deposits in the district, but the development of this mineralisation is incipient only.

The northerly third of the property is largely overburden covered. Soil sampling here showed a strongly marked zone of high values. A single cross section of the anomalous ground was investigated with the Induced Polarization technique. This revealed nothing of interest. The high soils are attributed to a general seepage runoff through the ground from bedrock of the same character as that seen to the south.

The aeromagnetic map shows a large rather featureless low over the Sheba ground, with a higher northwesterly trending ridge coming in from the east side.

Despite the astonishing geochemical expression of this property, it is concluded that there is no basis for recommending further work.

Submitted by:

McDairmid and Associates.

Submitted to:

Northwestern Explorations, Limited.

Date submitted:

None.

Property & Title:

Seventy-five claims and fractions are available for option, as per list attached. The claims have not been thoroughly surveyed. The accompanying map is tentative only, showing the location of the main groups but not the relations to the adjoining Cu, UM and Skeena Copper claims.

C.U. VM

Location:

The property is in Highland Valley, B.C. on the north slope of Gnawed Mountain, extending down nearly to Witches Brook on the north at elevations ranging from 4000 to 5500 feet a.s.l. Coordinates of the centre of the property are; Latitude $50^{\circ}27'N$, Longitude $120^{\circ}59'W$.

Access:

Moderately good secondary roads reach Highland Valley from either Ashcroft or Merritt. A jeep road leaving Highland Valley road 0.5 miles east of Bethlehem Copper Corporation Camp, extends through the Sheba property and on up nearly to the summit of Gnawed Mountain.

Mineral Deposits:

No actual showings were seen on the Sheba Property. Interest in the area arises from indirect geological and geochemical data. The Sheba straddles a north-south line between the copper-bearing breccia at Bethlehem Copper and the Gnawed Mountain breccia. The latter is a mass of breccia, 600 x 1500 feet in plan, with associated tourmalinization and silicification. It is thought that widespread low grade copper mineralization south and west of the breccia body may be indirectly associated with it. This mineralization has been tested by A.S. & R. and it does not extend on to Sheba ground as far as we know. *Geo-Chemical*

Stream sediment samples showed an astonishing array of high Holman Copper values in Solomon and Sheba creeks and their tributaries. In the 1957 sampling there is a recurrence of values between 50 and 80 p.p.m, and since these values persist generally into small and large tributaries alike, a figure of about 70 p.p.m may be considered as the local background.

In 1958, follow-up procedures were employed to try and establish an upstream cutoff in values on the Sheba ground. Values in the small stream at 170-190N, 35E become very high as the stream becomes smaller, then die out rapidly when the stream likewise dies out. The watershed contains abundant outcrops. Some very small occurrences of bornite and chalcopyrite were found in this area, but it is evident that there is no copper deposit of any importance. The same story applies to the tributary of Solomon Creek which heads in a rock walled coulee at 155N, 30E. Values decline when the watercourse disappears. The creek at 150-160N, 9500E was tested by taking samples at 100 foot intervals from the mantle adjacent to the watercourse. Only a few of these showed high Holman Copper values. Most were surprisingly very low, though material was clearly residual on the rocks which we assumed were supplying the copper to the streams. Some of these samples were checked by a total copper procedure, and the values so obtained were five to seven times the Holman value. Some zero Holman Coppers gave 30 p.p.m total copper. Some bornite veinlets were noted in this area.

Stream sediment samples along Sheba Creek showed a downstream increase. The lowest sample on the creek (115 p.p.m) is distinctly higher than the two next upstream (75 p.p.m). These Holman Copper values indicate a substantial increase for a creek whose total drainage area is 3.5 square miles. A line of soil samples taken across the overburden covered area between Solomon and

Sheba creeks showed a good group of high values 1000 feet east of Sheba Creek. These two facts together suggested that there might be some mineralization higher than the general background in the overburden covered area east of Sheba Cabin. Four lines of soil samples were eventually taken south of the original line and one to the north. Results are shown on the accompanying 400 scale plan. An area 1400 x 900 feet averages about 51 p.p.m. Holman Copper. A few of the samples along line 1 South were checked by the total copper method. Values were increased by a factor of between 5 and 9. One zero Holman Copper gave 30 p.p.m. total copper.

Geo-Physical

An Induced Polarization Survey was run along a line from west to east passing a few hundred feet south of the centre of the soil anomaly. The results are of no interest. There is a rather definite resistivity low in the region corresponding to the soil anomaly.

Sufficient geological traverses were made in the area to obtain a statistical view of the geology. In detail there is still much to be desired. A line of division is shown on the map between the area in which outcrops are frequent and well distributed, and that in which bedrock information is lacking. In the first category there is, in the present case, about ten percent outcrop. It is safe to assess this area on the basis of exposed rock. In the second category there may be a few outcrops, but the area is largely a field of ignorance.

Most of the outcrop area is a coarse grained low mafic quartz diorite or granodiorite. This rock was defined as Skeena Silver type by R. Chaplin in 1957. In the eastern portion of the map area there appears a more mafic and finer grained rock which locally has poikilitic feldspar. This is similar to the Billy Lake type described by Chaplin. A locally developed coarse grained orthoclase rich rock shows intrusive relations to the finer mafic phase in the area around 150N, 90E. Along the road west of Gnawed Mountain the rock is coarse, quartz-rich and pink, and is classed as Bethsaida type. The Gnawed Mountain breccia is mostly within the Bethsaida type. East of the breccia the rock type is Skeena Silver.

Younger intrusives were seen at three localities. At 210N, 37W an intrusive mass 150 feet or more wide trends roughly north. The rock is a pink quartz-feldspar porphyry near the edges and varies to a medium grained white rock with sporadic large feldspar and biotite crystals. Some veinlets of bornite were found near the west contact of this body. At 210N, 5E an isolated outcrop shows a quartz-rich pink feldspar porphyry at least 80 feet wide trending northerly along a well marked chilled contact with Skeena Silver type rock. A similar dyke with prominent anhedral quartz grains is well exposed in the wall of a coulee at 155N, 20E. This dyke is about 50 feet wide and trends northerly. It was noted by Chaplin 1957, and he noted very similar dykes three miles north on Bethlehem ground and three miles south near Roscoe Lake. In the east or

footwall side of this dyke at the locality noted on Sheba, there is an incipient development of pebble breccia in a narrow fractured zone, and considerable malachite stain is in evidence. A number of smaller porphyry dykes were noted between the dyke exposures at 155N and 210N but continuity of the large dyke was not established.

At 170N, 27E there is a well developed pebble dyke one to two feet wide. This carries visible chalcopryite. Nearby a number of small bornite veinlets were noted in the Skeena Silver country rock.

At 177N, 29E a system of nearly horizontal veinlets of specular hematite is developed in the Skeena Silver country rock. Very locally within the extent of a hand specimen, this amounts to a brecciation. This type of material is known to be associated with copper mineralization elsewhere in Highland Valley. No positive association was noted in this case, though there are bornite veinlets and sparsely disseminated chalcopryite in the vicinity.

Bornite veinlets and disseminated chalcopryite occur in the area 150-160N, 95E. which received intensive geochemical study.

Specks of chalcopryite are common in hand specimens from the outcrops on the whole of the Sheba property generally. It appears to be an accessory mineral in the rock and is not localized on fracture surfaces.

On the outcrop areas, there is a problem as to what mineralization if any may have been in the thin fractures which are now either too tight to reveal the mineralization, or too well weathered to have retained the minerals. The massive character of the outcrops and general lack of copper stain, make reasonable the conclusion that there is nothing of economic grade in these rocks.

Vancouver, B.C.

September 16, 1958

Charles S. Key P. Eng.
C. S. Key



NORTHWESTERN EXPLORATIONS, LIMITED

SHEBA WORK RECORD

July, August 1958

	Surveying & Line Cutting	Geochemical Sampling	Geological Traversing	Rate	Days	Totals
D. Hale (Laborer)	July 14-17 & 22 (5)	July 18-21 (4)		\$10/day	9	90
W.H. New (Sampler)	July 14 & 16 Aug 11 & 12 (4)	July 15, 17-24, 26-28 Aug 5 & 9 (14)	July 25 (1)	\$12	19	228
G. Davis (Asst. Geologist)	July 14, 16, 18-21 (6)	July 15, 17, 26-28 (5)	July 22 & 23 (2)	\$15	13	195
R. Wright (Surveyor)	July 14-23 (10)			\$15	10	150
C. Ney (Geologist)			July 14, 18, 22, 25, 26 (5)	\$35	5	175
C. Olsen (Analyst)		Aug 5		\$15	1	15
R. Jalbert (Laborer)	Aug 11	Aug 9 & 12 (2)		\$10	3	30
J. Barakso (Laborer)	Aug 11			\$10	1	10
H. Hamilton (Laborer)	Aug 11			\$10	1	10
A. Bentsen (Laborer)	Aug 11			\$10	1	10
A. Drummond (Asst. Geologist)			Aug 9	\$15	1	15
J. Anderson (Geologist)			Aug 9	\$20	1	20

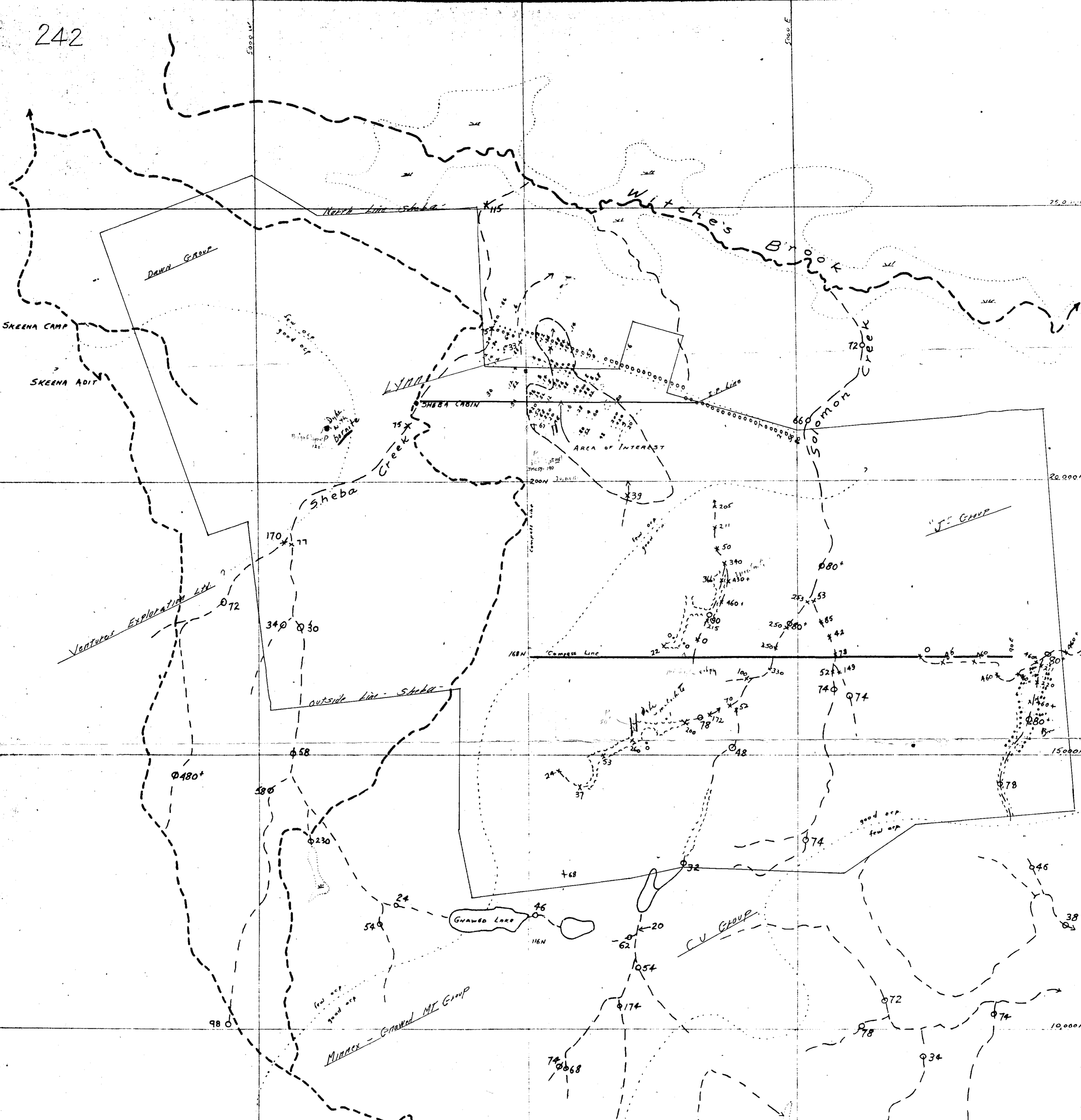
\$ 948

PLUS: I.P. Crew 1 day @ 260

Analyses - 437 Samples @ 50¢ 218.50

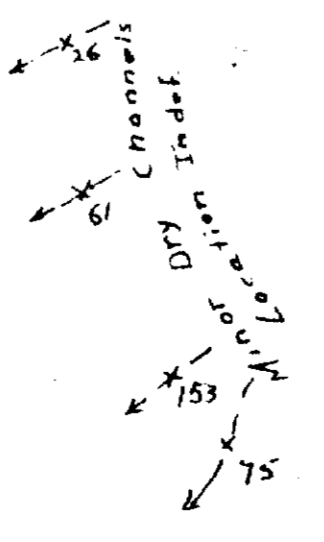
\$1426.50

Charles L. Ney P. Eng.



LEGEND

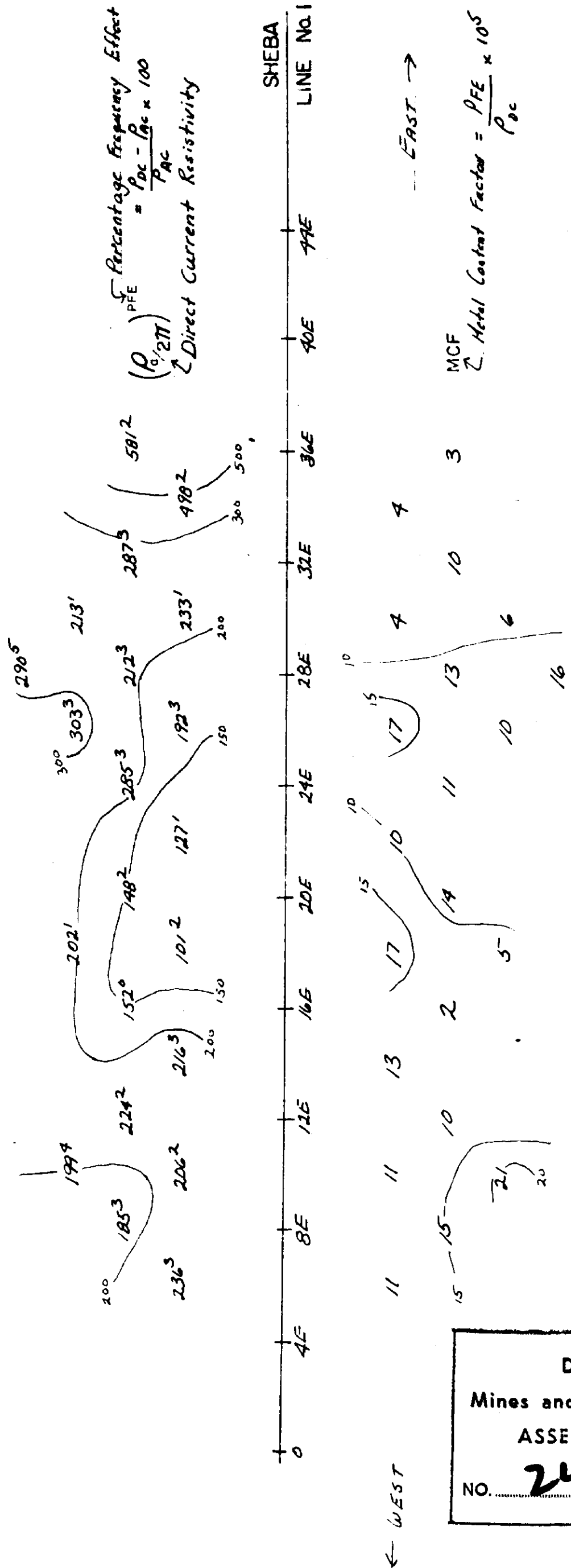
- 1957 Silt Sample ⓪
- 1958 Silt Sample ⓧ
- " Soil Sample •
- (Values = ppm. Holman Cu)
- Rock Walled Coulee - - -



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Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **242** MAP # **1**

NORTHWESTERN EXPLORATIONS LIMITED		
SHEBA GROUP KAMICOOPS MD, BC.		
GEOCHEMICAL RESULTS		
DATE: Aug 4 /58	DRAWN BY: C.S.N.	PLATE NO.
REVISED BY:	DATE:	SCALE: 1:1000'



$$\text{Percentage Frequency Effect} = \frac{\rho_{DC} - \rho_{AC} \times 100}{\rho_{AC}}$$

$$\rho_{AC} = \frac{\rho_{DC}}{2\pi}$$

$$\text{Direct Current Resistivity}$$

$$\text{Metal Content Factor} = \frac{\text{PFE} \times 105}{\rho_{DC}}$$

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Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 242 MAP #2

GEOPHYSICS DIVISION — BEAR CREEK MINING COMPANY

INDUCED POLARIZATION SURVEY SHEBA AREA LINE No.1 KAMLOOPS M.D., BRITISH COLUMBIA

SCALE: 1" = 400'

CONT. INT.: LOGARITHMIC

DATA BY: McPHAR, D.A.H.

DATE:

DRAWING: F-5.522